INSTALLATION - OPERATING - SERVICE MANUAL

Inertial storage tanks with pumping assembly.

DēLonghi

CLIMAVENETA

HPA
65-145

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The following symbols are used in this publication and inside the unit:

U **User**

I **Installer**

A **Assistance**

Important

Prohibition

Danger voltage

Climaveneta is part of the Eurovent certification programme.

The manufacturer reserves the right to modify the data in this manual without warning.

GENERAL WARNINGS

U I A

⚠ After removing the packaging, make sure the unit is complete and undamaged. If this is not so, contact the **De'Longhi** dealer who sold the appliance.

⚠ **De'Longhi** appliances must be installed by companies authorised according to Law no. 46 of March 5, 1990. On completion of installation, they must issue the owner with a certificate stating that installation has been carried out in respect of good work practices, in accordance with current legislation and following the instructions provided by **De'Longhi** in this manual.

⚠ These appliances have been designed and produced for use in combination with chillers for air conditioning and/or heating. They must be used in installations compatible with their performance characteristics.
Incorrect installation, regulation or maintenance or improper use absolves **De'Longhi** from all contractual and non-contractual liability for damage to persons, animals or things.

⚠ In the event of water leaks, turn the mains switch to "off" and close the water cocks.
Contact the **De'Longhi** Technical Assistance Service or professionally qualified personnel promptly. Do not intervene on the appliance personally.

⚠ If the unit is not used for long periods, proceed as follows:
- Place the mains switch in the "off" position
- Close the water cocks
- If there is a risk of freezing, make sure the installation contains antifreeze or empty the water circuit.

⚠ This instruction manual is an integral part of the appliance and must therefore be kept carefully. If the appliance is sold or transferred to alternative premises, the manual should ALWAYS be passed to the new owner/user. If it is lost or damaged, ask your local **De'Longhi** Technical Assistance Service for a replacement.

⚠ All repairs and maintenance must be carried out by the **De'Longhi** Technical Assistance Service or authorised personnel only following the instructions in this manual The appliance must under no circumstances be modified or tampered with as this may create situations of risk. Failure to observe this condition absolves the manufacturer of all liability for resulting damage.

FUNDAMENTAL SAFETY RULES

U I A

When operating equipment involving the use of electricity and water, a number of fundamental safety rules must be observed, namely:

⛔ The unit must not be used by children or by unfit persons without suitable supervision.

⛔ Do not touch the unit with bare feet or with wet or damp parts of the body.

⛔ Before cleaning, disconnect the appliance from the mains electricity supply by placing the mains switch in the "off" position.

⛔ Do not modify safety or regulation devices without authorisation and instructions from the manufacturer.

⛔ Do not pull, detach or twist the electrical cables coming from the unit, even when disconnected from the mains electricity supply.

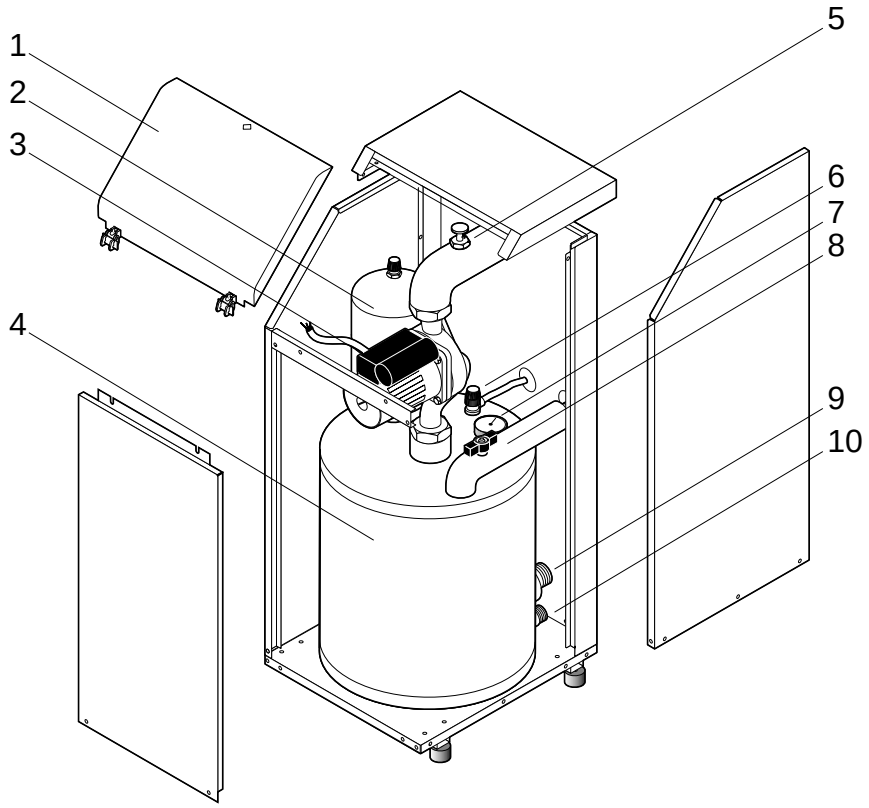
⛔ Do not open doors or hatches providing access to the inside of the appliance without first placing the mains switch in the "off" position.

⛔ Do not dispose of or abandon packaging material (cardboard, staples, plastic bags, etc) in the environment and keep it out of reach of children as it may constitute a hazard.

These storage tanks are designed for use in combination with chillers in small and medium capacity installations.
They are designed for internal use. They are supplied complete with insulated tank, pump, expansion tank, drain cock, safety valve, air vent valve and pressure gauge.

HPA storage tanks are functionally dependent on the connected **HRH/N** or **HRA/N** chiller.

HPA 65 B1 - 145 H1 MODEL



1 Inspection panel
2 Expansion tank
3 Pump
4 Tank
5 Manual air vent valve
6 Safety valve
7 Pressure gauge
8 Fill/top-up cock
9 Water connections
10 Drain cock

HPA storage tanks are designed for use with **HRH/N** or **HRA/N** chillers.

HPA STORAGE TANKS	HRH-HRHN CHILLERS										
	0011	**0021**	**0025**	**0031**	**0041**	**0051**	**0061**	**0071**	**0091**	**0101**	**0121**
65 B1	•	•	•	•	•	•	•				
145 H1	•	•	•	•	•	•	•	•	•	•	•

HPA STORAGE TANKS	HRA-HRN CHILLERS						
	0011	**0021**	**0025**	**0031**	**0041**	**0051**	**0061**
65 B1	•	•	•	•	•	•	•

IIDENTIFICATION

I A

The HPA storage tank can be identified by the:

- Packing label

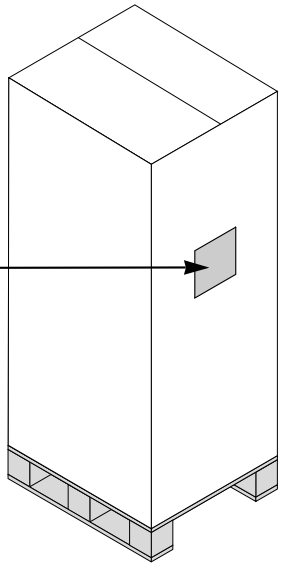
CLIMAVENETA

De' Longhi S.p.a. - 31100 Treviso / Italia
Via L.Seitz, 47 - tel. 04224131 fax 0422413659

MODEL:

VOLTAGE:

CODE: CE



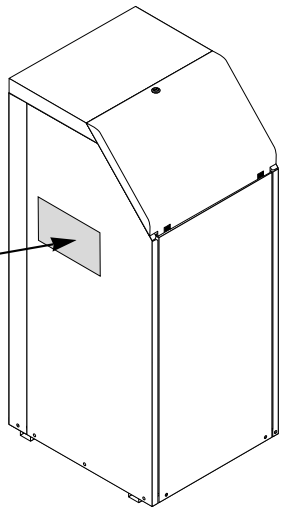
- Technical rating plate

Giving the technical data and performance characteristics of the storage tank. If this is lost, ask the **De'Longhi** Technical Assistance Service for a replacement.

CLIMAVENETA CE

MODEL _____ REGISTRATION NO. _____
CODE _____

STORAGE TANK CAPACITY	_____ l
EXPANSION TANK CAPACITY	_____ l
MAX. WORKING PRESSURE	_____ bars
EXPANSION TANK PRE-PRESSURISING	_____ bars
PUMP	_____ N°
ELECTRICAL POWER SUPPLY	_____ V - ~ - Hz
MAX. POWER INPUT	_____ kW
MAX. POWER INPUT	_____ A
SAFETY VALVE CALIBRATION	_____ bars
OPERATING WEIGHT	_____ kg
YEAR OF FABRICATION	_____



⚠ Tampering with or the removal or absence of rating plates or other means enabling the unit to be identified causes problems during installation and maintenance.

TECHNICAL DATA

I A

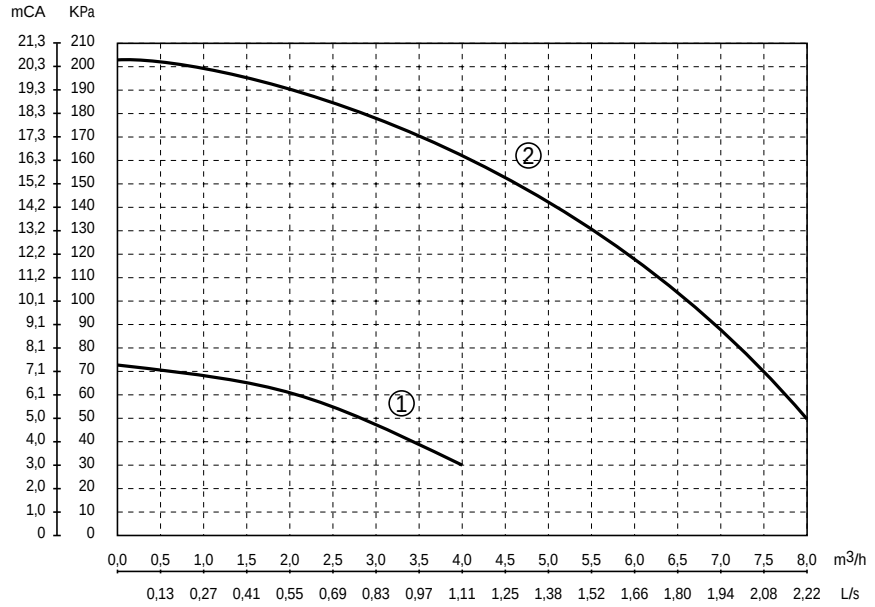
Description	Models		
	65 B1	145 H1	
Storage tank capacity	44	142	l
Expansion tank capacity	2	5	l
Expansion tank pre-pressurising	1,5	1,5	bars
Maximum working pressure	5	5	bars
Electrical power supply	230 ~ 50		V/ph/Hz
Maximum absorbed power	0,21	0,55	kW
Maximum absorbed current	0,92	3,80	A
Start-up current	3,7	15,2	A
Safety valve calibration	3	3	bars
Operating weight	79	220	kg

QUANTITY OF WATER IN INSTALLATION

Model HRH-N	0011	0021	0025	0031	0041	0051	0061	0071	0091	0101	0121	
Minimum	50	70	80	100	110	130	150	220	250	300	350	Litres
Recommended	100-140	130-180	150-210	170-240	230-300	270-360	320-430	410-550	490660	580-770	700-930	Litres

Model HRA-N	0011	0021	0025	0031	0041	0051	0061	
Minimum	50	70	80	100	110	130	150	Litres
Recommended	100-140	130-180	150-210	170-240	230-300	270-360	320-430	Litres

USEFUL STORAGE TANK HEAD CURVES (*)



(1) Useful head 65 lt. storage tank kit (for units 0011÷0061) HPA.65.B.I.

(2) Useful head 145 lt. storage tank kit (for units 0071÷0121) HPA.145.H.I.

(*) To obtain the useful heads delivered to the installation, subtract the pressure drop of the plate heat exchanger.

HEAT EXCHANGER PRESSURE DROP (INSTALLATION WATER SIDE)

Model	Water	m³/h	0,40	0,6	0,8	0,90	1,00	1,2	1,4	1,6	1,7	2,0	2,2	-
HRA-HRN/HRH-HRHN	flow	l/sec	0,111	0,167	0,222	0,250	0,278	0,333	0,389	0,444	0,500	0,555	0,611	-
0011	Pressure drop	kPa	5	11	20	26	31	44	-	-	-	-	-	-
0021		kPa	-	8	15	18	23	33	45	54	-	-	-	-
0025		kPa	-	7	10	16	19	24	35	46	-	-	-	-
0031		kPa	-	-	9	11	17	20	25	36	40	55	-	-

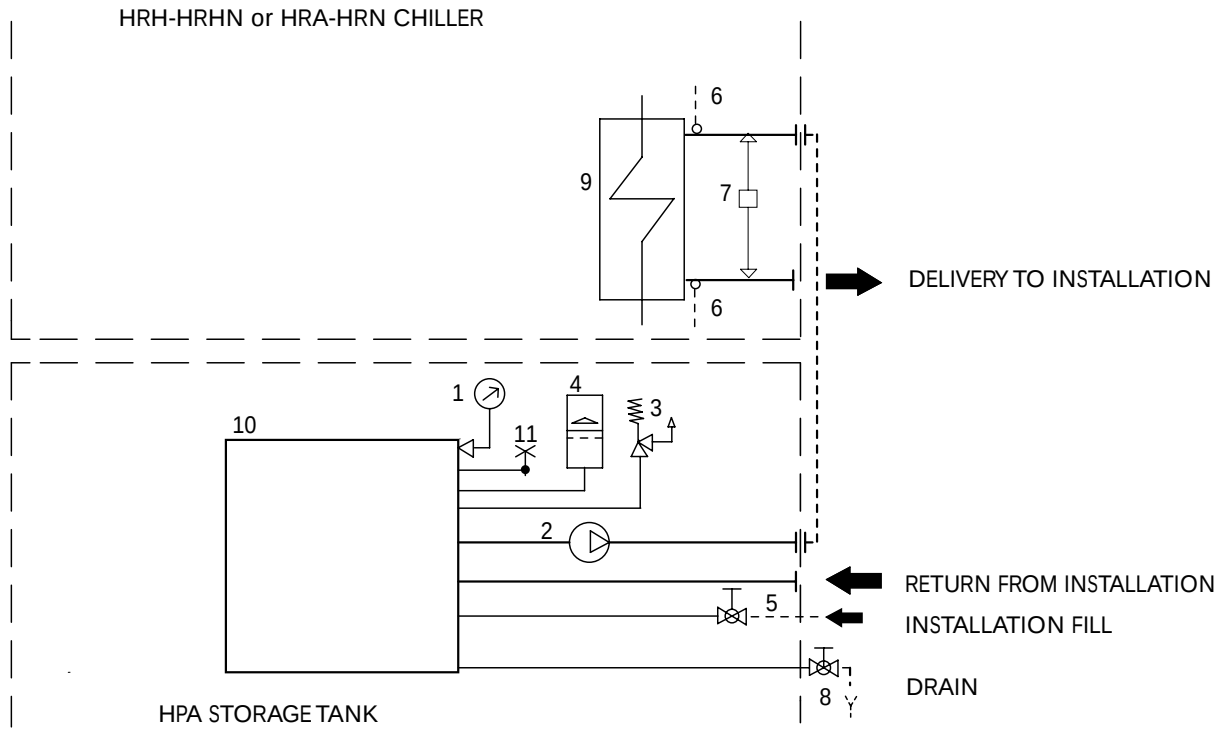
Model	Water	m³/h	0,8	1,2	1,6	2,1	2,6	2,8	2,9	3,1	3,6	4,0	4,4	4,7
HRA-HRN/HRH-HRHN	flow	l/sec	0,222	0,333	0,444	0,555	0,667	0,778	0,805	0,889	1,000	1,111	1,222	1,3
0041	Pressure drop	kPa	-	8	12	21	32	37	40	46	-	-	-	-
0051		kPa	-	5	10	14	24	28	30	34	46	-	-	-
0061		kPa	-	-	-	12	16	24	25	27	36	45	54	-

Model	Water	m³/h	2,4	3,1	3,8	4,6	5,3	5,9	6,5	6,6	7,3	8,0	8,7	9,4
HRA-HRN/HRH-HRHN	flow	l/sec	0,667	0,861	1,055	1,250	1,444	1,639	1,805	1,833	2,028	2,222	2,41	2,61
0071	Pressure drop	kPa	12	20	30	44	58	72	-	-	-	-	-	-
0091		kPa	19	15	22	33	44	54	66	68	-	-	-	-
00101		kPa	-	11	17	26	34	42	52	53	64	77	-	-
00121		kPa	-	8	12	18	24	30	36	38	46	56	66	77

Note: The highlighted values refer to the nominal flow rate

INTERNAL HYDRAULIC CIRCUIT

I



1 Pressure gauge
2 Pump
3 Safety valve
4 Expansion tank
5 Fill/top-up cock
6 Temperature sensor
7 Differential pressure switch
8 Drain cock
9 Plate heat exchanger
10 Tank
11 Manual air vent valve

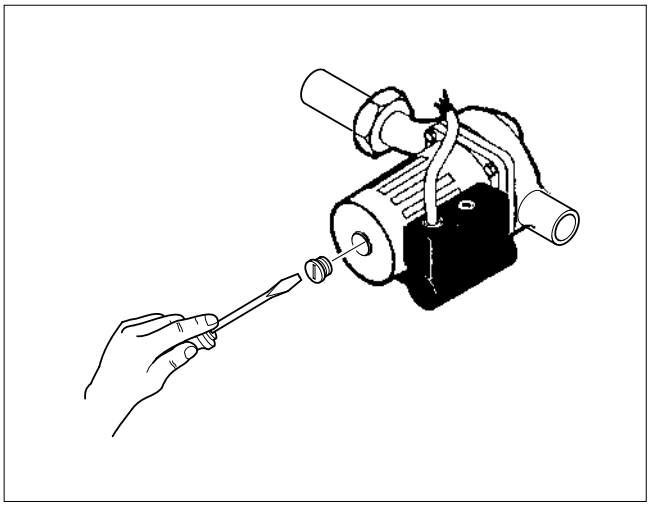
PUMP

I A

The HPA storage tank is supplied connected to a pump.

⚠ When started up for the first time and at least once a year, you are recommended to control the shaft rotation as, particularly after long periods not in use, deposits and/or residues may prevent free rotation.

⛔ The pump must never be operated without water.



U I A STARTING UP

After first start-up by the Technical Assistance Service, the HPA storage tank is regulated in "automatic" and requires no further action.

The **HPA** storage tank is functionally dependent on the connected **HRH/N** or **HRA/N** chiller.

U I A SHUTTING DOWN FOR LONG PERIODS

To deactivate the unit, follow the instructions in the **HRH/N** or **HRA/N** chiller instruction manual.

⚠ To begin operating the unit again after a long period of inactivity, contact the **De'Longhi** Technical Assistance Service.

U I A CLEANING

Cleaning by the user is limited to the external panelling. Use a cloth moistened with soapy water only.
In the case of stubborn marks, moisten the cloth with a mixture of 50% water and denatured alcohol with specific products.
After cleaning, dry the surface thoroughly.

⛔ Never use a sponge with abrasive products or powder cleaning products.

⛔ Before cleaning, always disconnect the unit from the mains electricity supply by placing the mains switch in the "off" position.

U I A MAINTENANCE

Regular maintenance is essential to maintain the long-term efficient, safety and reliability of the **HPA** storage tank.
The maintenance plan for the **HPA** storage tank is the same as for the **HRH/N** or **HRA/N** chiller connected.

Dealer: .....

Road .....

tel. .....

Installer: .....

Mr .....

Road .....

tel. .....

Technical Assistance: .....

Mr .....

Road .....

tel. .....

DATE	OPERATION

I RECEIVING THE PRODUCT

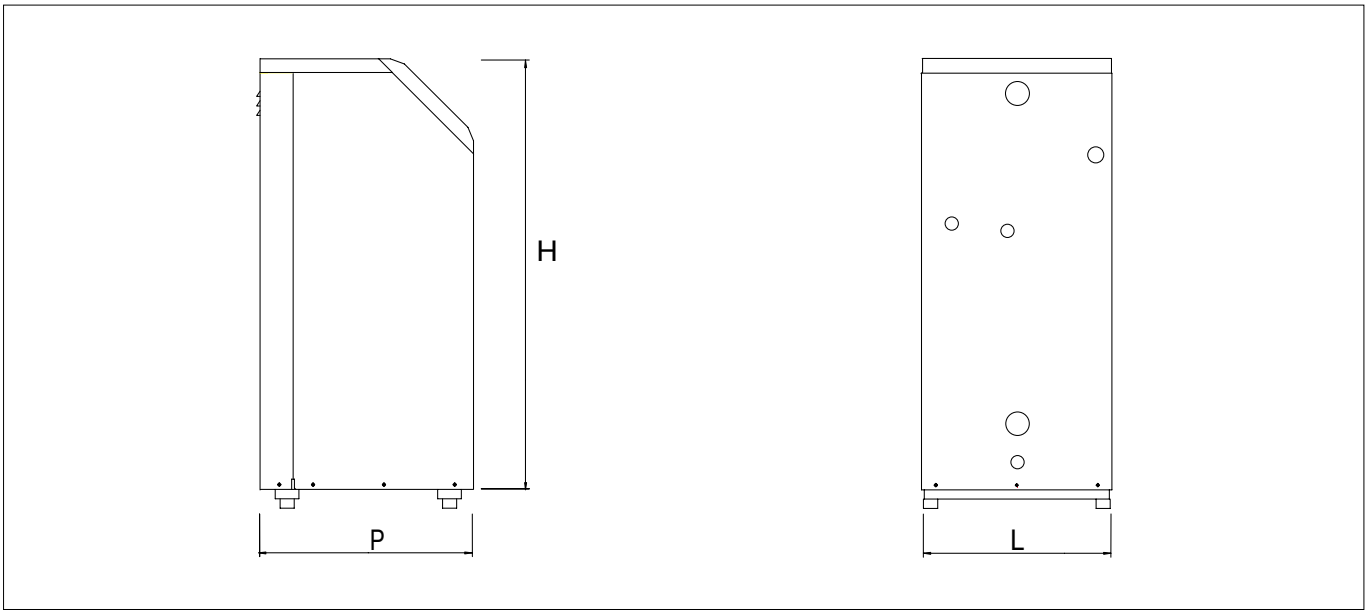
HPA storage tanks are supplied in a single pack on a wooden pallet protected by cardboard packaging. They come complete with:
– instruction manual
– guarantee certificate
– bar code labels
inserted in a plastic envelope inside the packaging.

⚠ The instruction manual is an integral part of the unit and should therefore be read and kept carefully.

⚠ It is recommended that the packaging should not be removed until the unit is located in the installation site.

⛔ Do not dispose of packaging elements in the environment or leave them within reach of children as they are a potential hazard.

I DIMENSIONS AND WEIGHTS



Modello	65 BI	145 H1	
L (width)	400	800	mm
P (depth)	450	600	mm
H (height)	950	950	mm
Gross weight	40	85	kg
Net weight	35	78	kg

HANDLING

I

After removing the packaging, the unit must be handled by qualified personnel only using equipment suitable for the weight of the HPA storage tank and in accordance with accident prevention legislation.

⚠ During transport, the storage tank must be kept in the vertical position.

POSITIONING

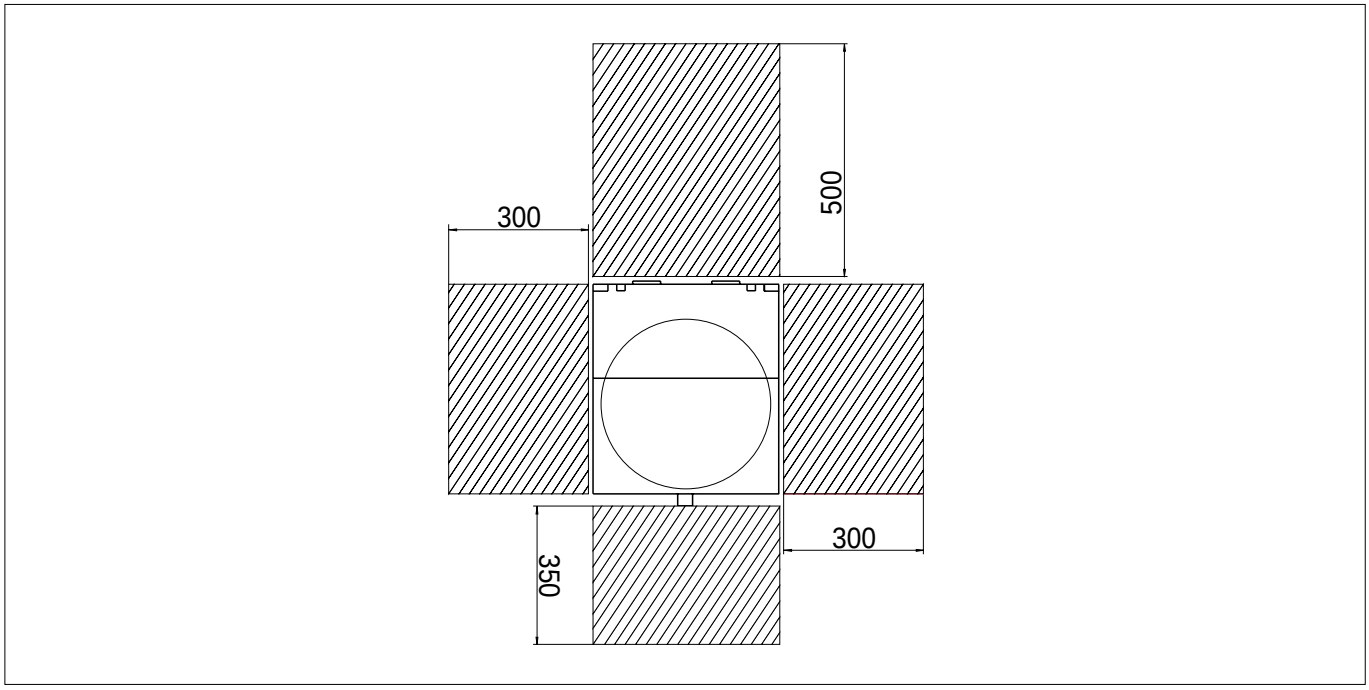
I A

The site for installation of the **HPA** units must be established by the installation designer or other competent professional and must take account of technical requisites, regulations and legislation.

HPA units:

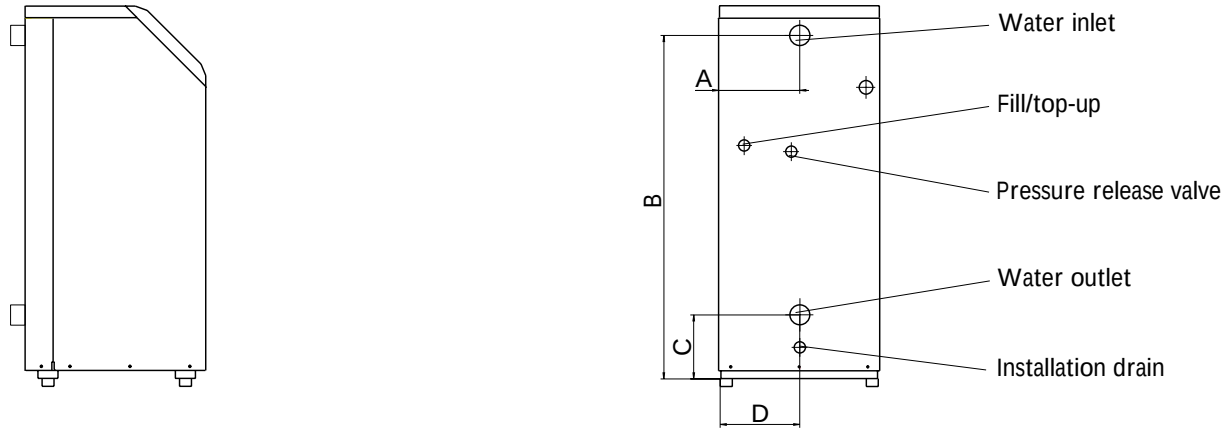
- Must be positioned on a level surface strong enough to support the weight
- the foundation slab must be sufficiently rigid and must not transmit vibrations to underlying or neighbouring rooms.

HPA units are designed for internal use and must be installed in an area respecting the dimensions given in the figure below. The distances specified are necessary to allow for normal cleaning and maintenance operations to be carried out.

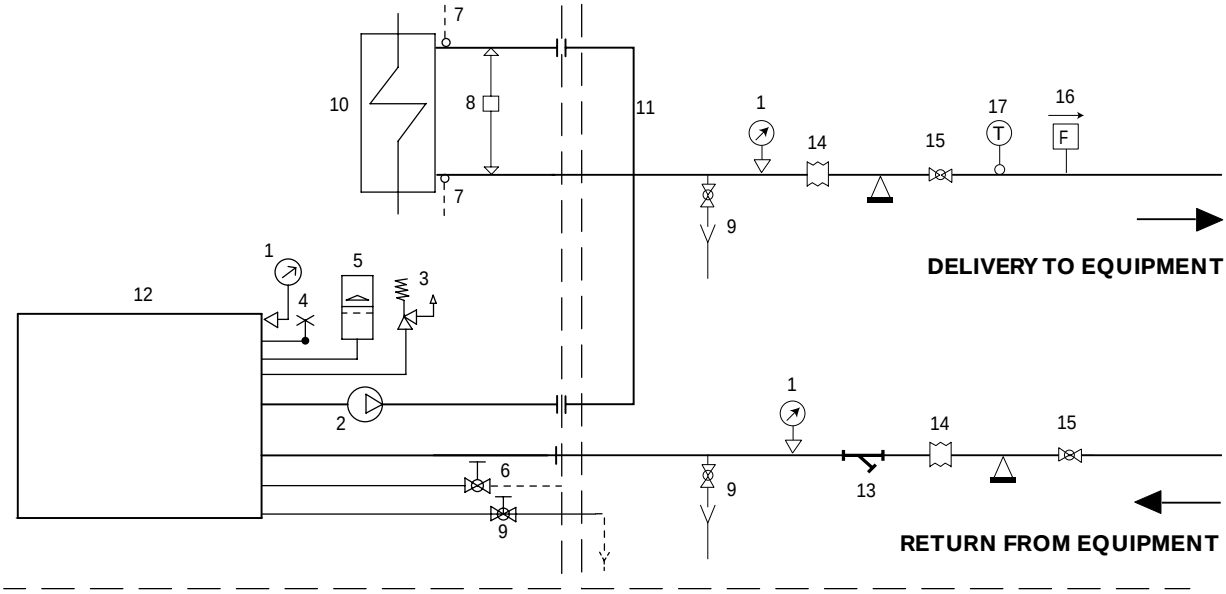


HPA storage tanks are designed and constructed for use with **HRH/N** or **HRA/N** chillers in heating and air conditioning installations.

The hydraulic connections are as follows:



Dimension	65B1	145H1	
A	200	320	mm
B	860	760	mm
C	160	85	mm
D	200	140	mm
Hydraulic connections inlet/outlet	1"	1"1/4	Gas



1 Pressure gauge
2 Pump
3 Safety valve
4 Manual air vent valve
5 Expansion tank
6 Fill/top-up cock
7 Temperature sensor
8 Differential pressure switch
9 Drain/chemical wash valve
10 Heat exchanger unit side
11 Connection to storage tank
12 Tank
13 Filter
14 Vibration damper joint
15 Gate valve
16 Flow switch
17 Thermometer

⚠ The choice and the installation of the components in the system is the responsibility of the installer, who must act according to the rules of good practice and the legislation in force.

⚠ The liquid flow switch must be dimensioned and regulated in accordance with the hydraulic characteristics of the installation.

⚠ Install the flow switch half way along a straight horizontal stretch of piping at least a metre long.

⚠ Construct a unit by-pass to enable the piping to be washed without the appliance being disconnected.

⚠ Use suitable diameter connection piping and avoid exerting weight on the unit.

⚠ Installations containing antifreeze or covered by specific legislation must be fitted with hydraulic disconnectors.

⚠ Fill/top-up water with particular characteristics must be conditioned with suitable treatment systems. See the table below for the reference values.

REFERENCE VALUES

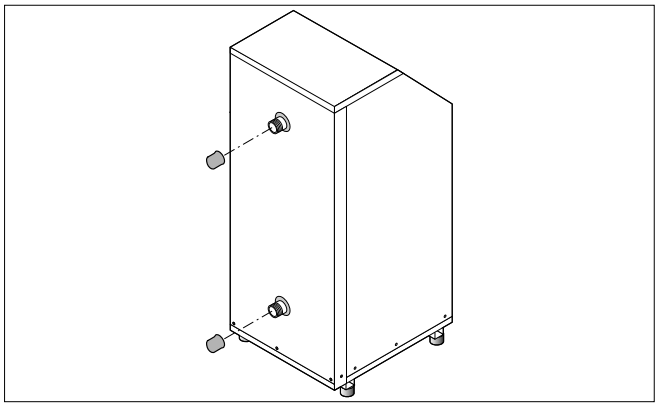
Reference values	
PH	6 - 8
Electrical conductivity	less than 200 mV/cm (25°C)
Chlorine ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0,3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 35° f
Sulphur ions	nil
Ammonia ions	nil
Silicon ions	less than 30 ppm

⚠ The manufacturer is not liable for obstruction, breakage or noise resulting from the failure to install filters, a flow switch or vibration dampers.

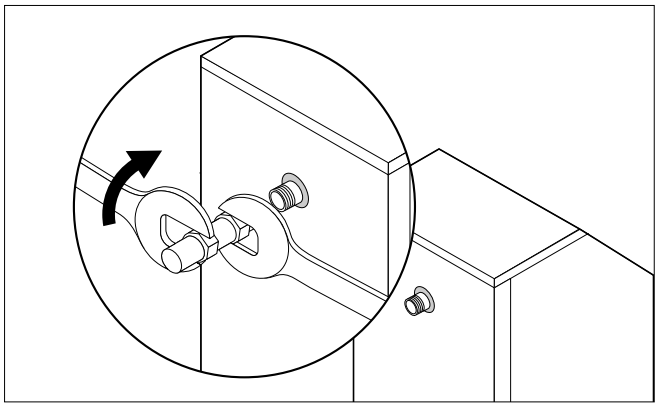
⚠ The storage tank safety valve outlet must be connected to an appropriate collection and disposal system.
The manufacturer is not responsible for possible flooding caused by operation of safety valves.

To connect:

- Remove the protective plastic caps from the hydraulic connections.



Connect the installation following the diagram on page 11.

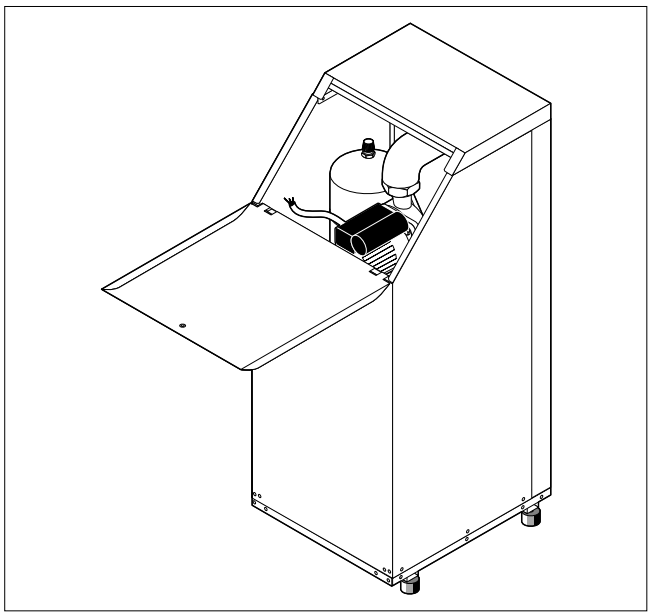


⚠ To seal the threads, hemp and jointing paste is recommended. Teflon should not be used in the presence of antifreeze.

⚠ Before connecting, make sure the pipes are free from stones, and, rust, dross or other foreign bodies which may damage the installation.

Electrical connections must be carried out by qualified personnel in respect of current legislation.

- Open the inspection panel

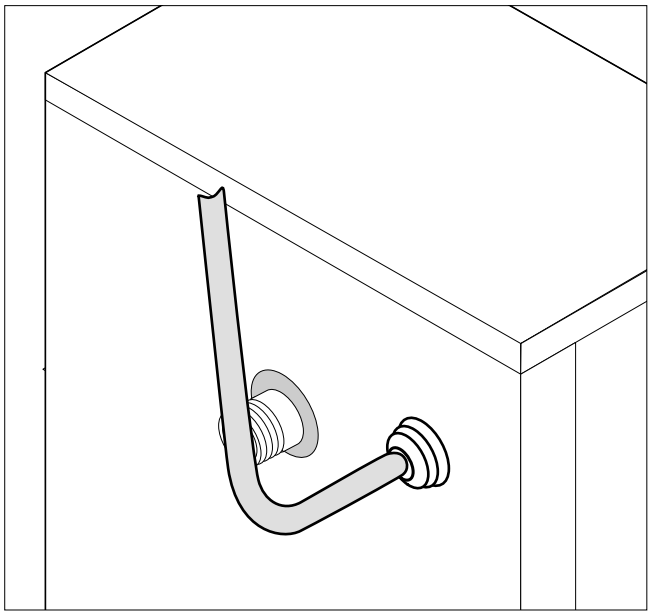


- Pass the electrical cable connected to the pump through the cable grip on the storage tank

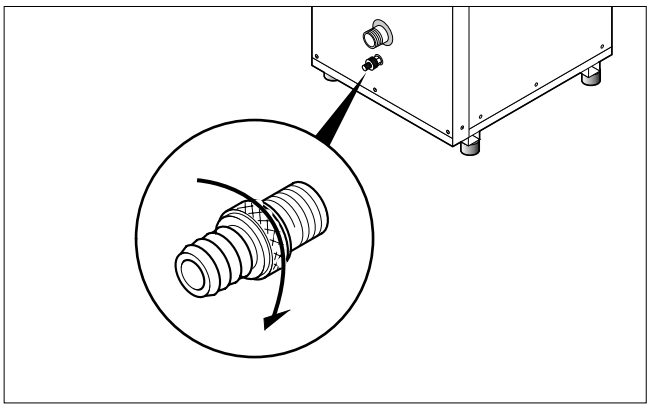
- Connect the **HRH/N** or **HRA/N** chiller following the instructions given in the chiller manual

- After completing the electrical connections, replace the inspection panel and screw up the fixing screws.

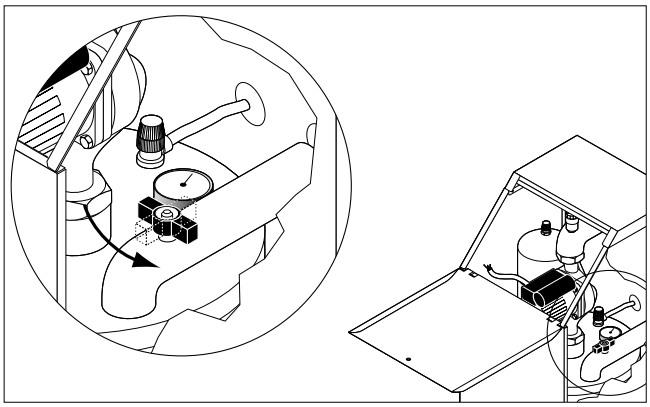
Electrical cables may enter the appliance ONLY in the positions specifically described in this manual.



FILLING



- Before filling, make sure the mains switch is on the “off” position
- Make sure the drain cock is closed
- Open the inspection panel
- Open all air vents in the installation, terminals and storage tank
- Open the installation gate valves



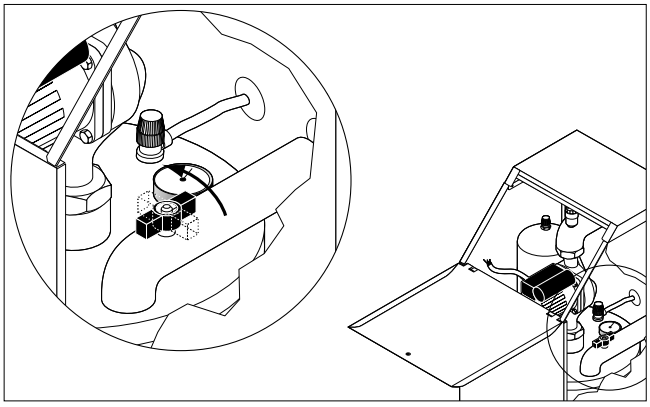
- Begin filling, slowly opening the water filling/top-up cock
- When water begins to leak out of the air vent valves, close them and continuing filling until the specified pressure is reached in the installation
- Close the fill/top-up cock
- Close the inspection panel.

⚠ The installation must be filled to a pressure of between 1 and 2 bars.

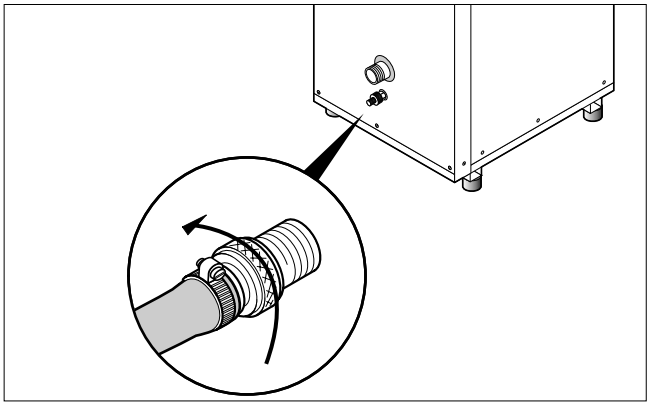
⚠ This operation should be repeated after the unit has been in operation for several hours. Control installation pressure regularly and top-up if it drops below **1 bar**.

⚠ Check all joints for tightness.

EMPTYING



- Before emptying, make sure the mains switch is in the “off’ position
- Open the inspection panel
- Make sure the fill/top-up water cock is closed



- Connect a plastic pipe to the drain cock hose connection
- Open all air vents in the installation, terminals, storage tank and chiller
- Open the drain cock
- Close the inspection panel.

⚠ If the fluid in the circuit contains antifreeze, it should not be allowed to drain freely as it is pollutant. It should be collected for possible reuse.

I A PREPARING FOR FIRST START-UP

First start-up must be carried out by the **De'Longhi** Technical Assistance Service who will validate the Guarantee Certificate on completion.
After installation and before starting up the **HPA** storage tank, place the mains switch in the "off" position and make sure that
- All safety conditions have been respected
- The unit is adequately fixed to the surface it rests on
- All hydraulic and electrical connections have been carried out as indicated in the instruction manual
- The hydraulic circuit is filled and vented
- The condensate drain is not obstructed
- All hydraulic circuit valves are open
- The pump rotates freely.

I A ROUTINE MAINTENANCE

The maintenance plan for the **HPA** storage tank is the same as for the **HRH/N** or **HRA/N** chiller connected and includes the following operations and checks:
- Filling of the water circuit
- Presence of air bubbles in the water circuit
- Power supply voltage
- Electrical absorption
- tightness of electrical connections
- Efficiency of pump.

MALFUNCTION	CAUSE	REMEDY
The pump does not start-up	Pump motor failure	Replace pump
	No electricity	Check
	Pump blocked	Unblock
Pump noisy	Air in hydraulic circuit	Vent
	Functioning out of the operating curve	Adjust calibrating valve
Noise and vibrations	Contact between metal bodies	Check
	Weak foundations	Repair
	Loose screws	Tighten screws
Safety valve activated	Pressure in installation too high	Drain
	Pressure low in expansion tank	Raise pressure
Leaks in hydraulic circuit	Leaks in hydraulic circuit	Check

COD.5788001600

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